Operating Instructions

RTK Instruments Limited
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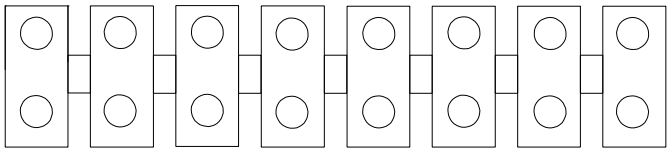
Intrinsically Safe Sounder Type DB7

Description

The DB7 Sounder is a strong, lightweight warning sounder, BASEEFA certified EExia IIC and IIB, with 26 user-selectable tones, and an output level of 104dB(A) or 107dB(A) [IIB].

Connection Details



WARNING:

Without I/S Device connect supply to 1+VE & -VE
With I/S Device connect supply to 2+(I/S) & -VE

NOTE:- the polarity of terminals 1 and 2 are reversed to generate tone 2.

Installation

Mounting

The sounder should be positioned using the two available fixing holes in the base. It is recommended that stainless steel nuts and bolts be used if the environment is corrosive.

The sounder will operate in any attitude, from horizontal to vertical. However, it is important to note that the alignment and mounting of the sounder should ensure that:

1. Dust or debris cannot lodge in the re-entrant horn.
2. Water from hose's, jets or rain cannot settle in the re-entrant horn.

The sounder should be installed in accordance with certified parameters (see the appropriate installation drawing as listed in Table 3).

Removing and replacing the Cover

Remove the cover/horn of the sounder by unscrewing the 3 fixing screws (hexagon key size 3mm AF), and pulling the cover/horn gently away from the base.

Replacing the cover/horn is a reverse process of the above, but care should be taken to ensure that the seal is securely located in its groove during re-assembly.

Wiring

Cable termination should be in accordance with specifications applying to the application. It is recommended that all cables and cores should be fully identified. Ensure that only the correct glands are used and that the assembly is shrouded. Refer to the connection details opposite.

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FM 14290

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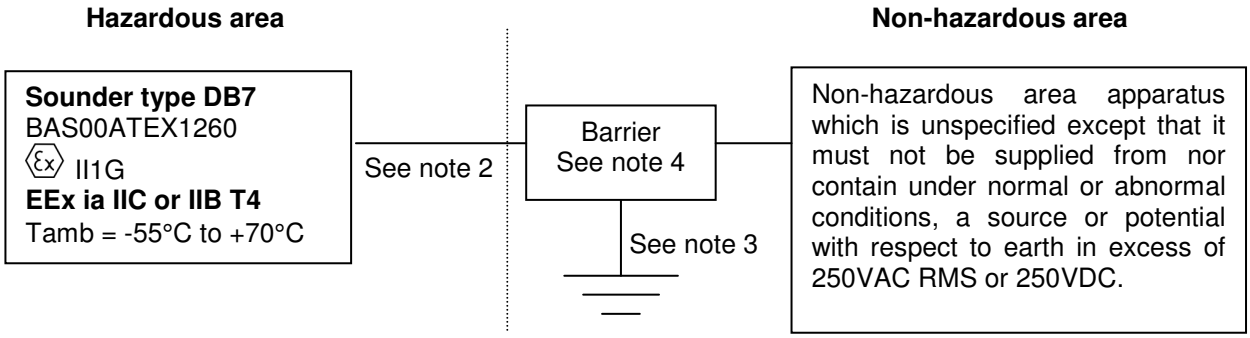
Installation Diagram



Notes:

1. The capacitance and either inductance or inductance to resistance ratio of the hazardous area cables must not exceed the values shown in tables 1a to 1d.

2. The electrical circuit in the hazardous area must be capable of withstanding an AC test voltage of 500V RMS to earth or frame of the apparatus for one minute.

3. The installation, including barrier earthing arrangements, must comply with the installation requirements of the country of use. e.g. in the UK, BS EN 60079-14

4. Any Zener Diode Safety Barrier or Galvanic Isolation Interface certified by an EEC approved body to [EEx ia] IIC having the following output parameters:
   Dual Tone 24V, IIC and IIB Uo=28VDC, Io=93mA, Po=0.65W
   Dual Tone 12V, IIC and IIB Uo=15.7VDC, Io=150mA, Po=0.56W

The output current of each barrier must be limited by a resistor 'R' such that Io=Uo/R.

Table 1a. Dual Tone 24V	IIC	IIB	IIA
Group	0.083	0.65	2.15
Capacitance µF	0.5	12.6	33.6
Inductance mH or L/R ratio uH/Ω	6.7	165	440

Table 1b. Dual Tone 12V	IIC	IIB	IIA
Group	0.48	2.95	11.9
Capacitance µF	0.3	4.95	13.2
Inductance mH or L/R ratio uH/Ω	12	195	520

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Tone selection
The required tones should be selected by referring to Table2 below, or to the information within each unit. The 2 x 5 way DIL switches on the PCB (marked as TONE 1 and TONE 2) should then be set to the codes as shown (1 being equivalent to the on position, 0 being equivalent to the off position).

With the supply +ve applied to terminal 1, -ve to terminal 2, the tone set by switch "TONE 1" is produced. Reversing the polarity of the supply external to the unit (i.e terminal 1 is effectively now –ve, terminal 2 now +ve), causes the tone set by switch "TONE 2" to be produced.

Note: The default tone setting is as tone 14 in the table below.

Tone no	Tone frequency	DIL switch setting 12345	Tone description
1	Alt Tones 800/970 Hz at ¼ sec	11111	
2	Sweeping 800/970 Hz at 7 Hz	11110	Fast Sweep (LF)
3	Sweeping 800/970 Hz at 1 Hz	11101	Med Sweep (LF)
4	Continuous at 2850 Hz	11100	
5	Sweeping 2400-2850 Hz at 7 Hz	11011	Fast Sweep
6	Sweeping 2400-2850 Hz at 1 Hz	11010	
7	Slow Whoop	11001	Slow Whoop
8	Sweep 1200-500 Hz at 1Hz	11000	Din Tone
9	All tones 2400-2850 Hz at 2 Hz	10111	
10	Int tone of 970 Hz at 1 Hz	10110	Back-up Alarm (LF)
11	Alt tones 800-970 Hz at 7/8 Hz	10101	
12	Int tone at 2850 Hz at 1 Hz	10100	Back-up Alarm (HF)
13	970 Hz at ¼ sec on 1 sec off	10011	
14	Continuous at 970 Hz	10010	
15	554 Hz for 100mS/440 Hz for 400mS	10001	French Fire Sound
16	Int 660 Hz 150mS on 150mS off	10000	Swedish Fire Alarm
17	Int 660 Hz 1.8 sec on 1.8 sec off	01111	Swedish Fire Alarm
18	Int 660 Hz 6.5 sec on 13 sec off	01110	Swedish Fire Alarm
19	Continuous 660 Hz	01101	Swedish Fire Alarm
20	Alt 554-440 Hz at 1 Hz	01100	Swedish Fire Alarm
21	Int 660 Hz at 7/8 Hz	01011	Swedish Fire Alarm
22	Int 2850 Hz 150mS on 100mS off	01010	Pelican Crossing
23	Sweep 800-970 Hz at 50Hz	01001	Low Freq Buzz
24	Sweep 2400-2850 Hz at 50 Hz	01000	High Freq Buzz
25	3 970 Hz pulses 0.5 on/0.5 off, 1.5 off	00111	
26	3 2850 Hz pulses 0.5 on/0.5 off, 1.5 off	00110	

Table 2

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Maintenance

During the life of the sounder, it should require little or no maintenance. However, if abnormal or unusual environmental conditions occur or due to plant damage or accident etc, then a visual inspection is recommended.

Barrier Types

Typical suitable barrier types are as shown in Table 3 below:

DB7 unit type	Barrier spec	Typical barrier	Barrier cert no
24V IIC (using single tone)	28V240R Uo=24.2V, Io=107, Po=0.65W	RTK S967POS RTK WIS1211, WIS1214	Baseefa02ATEX0074 BAS99ATEX7065
24V IIB (using single tone)	28V240R Uo=24.2V, Io=107, Po=0.65W	RTK S967POS RTK WIS1211, WIS1214	Baseefa02ATEX0074 BAS99ATEX7065
12V IIC (using single tone)	15V60R	RTK S937POS	Baseefa02ATEX0074
12V IIB (using single tone)	15V60R	RTK S937POS	Baseefa02ATEX0074
24V IIC (using dual tone)	28V300R/28V300R	RTK S954S or RTK S953POS + LR90 (Line Reversing module)	Baseefa02ATEX0074
24V IIB (using dual tone)	28V300R/28V300R	RTK S954S or RTK S953POS + LR90 (Line Reversing module)	Baseefa02ATEX0074
12V IIC (using dual tone)	15V100R/15V100R	RTK S934AC	Baseefa02ATEX0074
12V IIB (using dual tone)	15V100R/15V100R	RTK S934AC	Baseefa02ATEX0074

Table 3

Certification

BASEEFA certification to EN 50014 and EN 50020.
Gas Groups IIC and IIB, T4, Certificate No. BAS00ATEX1260

Certificates available on request.

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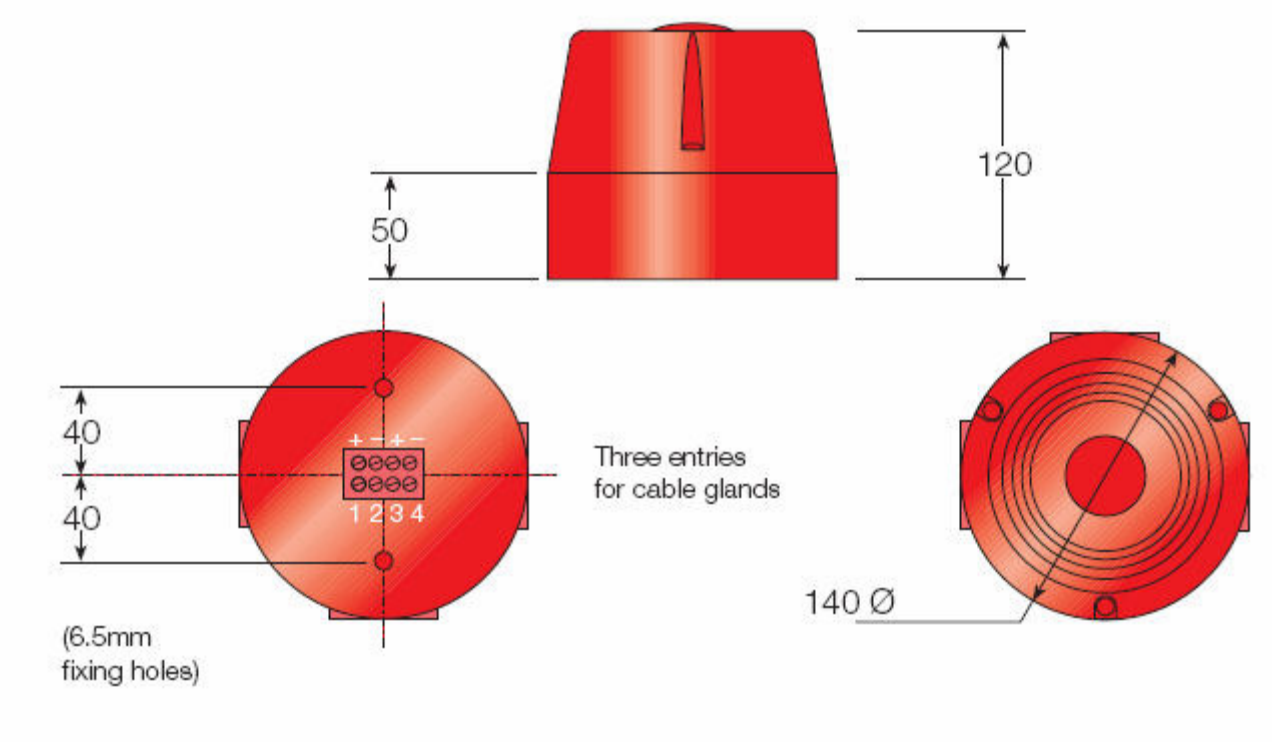
Dimensional Details



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Other RTK Products

RTK Instruments produce a range of complementary products for many applications in the Industrial Control and Instrumentation field for both safe and hazardous areas, as listed below.
All standard products come with a **5 year warranty** from this ISO9001:2000 approved company:

Alarm Annunciators
Rack Mounted Alarm Systems
Sequence of Event Recorders
Trip Amplifiers
Trip Monitoring Systems
Signal Converters and Isolators
Frequency Converters
Universal Panel Meters
Power Supplies
Loop Powered Isolators and Displays
Complete range of Hazardous Area products including:
- **Intrinsically Safe Alarm annunciators**
- **Explosion Proof Alarm annunciators**
- **LED Beacons**
- **Light Towers**
- **LED indicators**
- **Illuminated switches and pushbuttons**
- **Sounders**
- **Relays**
- **IS Interface units including Zener Barriers, IS Isolators, Multiplexers**

Please ring our sales office to obtain our latest brochure.

Due to policy of continuous product development, we reserve the right to amend these specifications without notice.

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EC DECLARATION OF CONFORMITY

This is to certify that the DB7 Intrinsically Safe Sounder

Supplied by:-

RTK INSTRUMENTS LTD
ST JAMES BUSINESS PARK
KNARESBOROUGH
NORTH YORKSHIRE
HG5 8PJ

Conforms to the protection requirements of the following directives:

- Council directive 89/336/EEC (EMC Directive) to BS EN 50082-2 and BS EN50081-2
- Council Directive 94/9/EC (ATEX Directive) to EN50014, EN50020 and EN50284

The product is certified to:

Ex II 1 G EEx ia IIC or IIB T4 (Tamb = -55°C to +70°C)

Certificate No: BAS00ATEX1260

The Quality System is certified and monitored by Baseefa Ltd, Rockhead Business Park, Staden Lane, Buxton, Derbyshire, SK17 9RZ

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PAUL HARTLEY - MANAGING DIRECTOR
Date: 12th March 2008

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